



Estrogen Metabolism Assessment (Urine)

Menopausal



Patient: **SAMPLE**
REPORT

DOB: June 5, 1941
Sex: F

Order Number: A123456

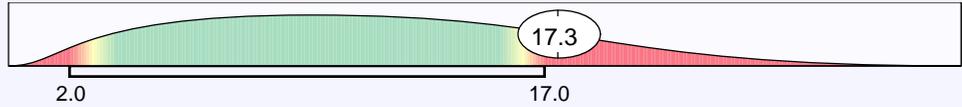
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Estrogen Metabolism

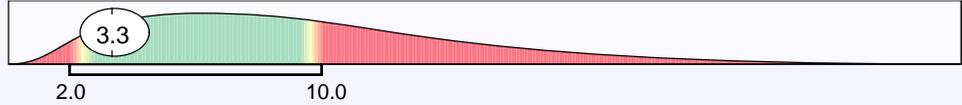
2-Hydroxyestrogen (2-OHE)

Ref Range
ng/mg creat



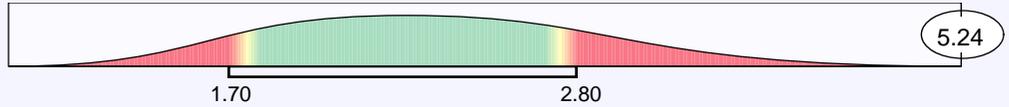
16-alpha-Hydroxyestrone (16-alpha-OHE1)

Ref Range
ng/mg creat



2-OHE:16-alpha-OHE1 Ratio

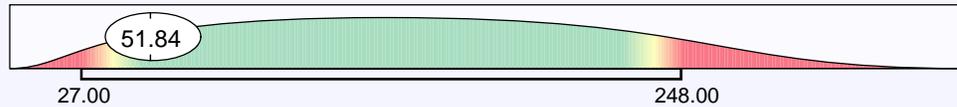
Ref Range



Creatinine

Creatinine

Ref Range
mg/dL



Reference Range Information

Reference ranges for 2-Hydroxyestrogen and 16alpha-Hydroxyestrone were determined with urine samples from menopausal women who were not using hormone-replacement therapy. The reference range for the 2-OHE: 16-alpha-OHE1 ratio was derived from the literature. The reference range for creatinine was derived from a population of pre- and post-menopausal women.

Reference Intervals for Menopausal Women

Analyte	Reproductive Range (Luteal)	Unsupplemented Menopausal Range	Patient Result
2-Hydroxyestrogen	3.0 - 33.0	2.0 - 17.0	17.3
16-alpha-hydroxyestrone	4.0 - 24.0	2.0 - 10.0	3.3

Commentary

Commentary is provided to the practitioner for educational purposes, and should not be interpreted as diagnostic or treatment recommendations. Diagnosis and treatment decisions are the responsibility of the practitioner.

Estrogen Metabolism

Estrogen metabolism is an important measure of hormonal balance. While literature refers to the involvement of hydroxyestrogens in a number of conditions, levels shown in this test are not diagnostic of any specific medical condition. High or low levels of the hydroxyestrogens, or an elevated or depressed ratio should be evaluated in relation to the patient's total history, physical, and clinical presentation.

2-hydroxyestrogen (2-OHE) levels are above the reference range, reflecting a beneficial direction in estrogen metabolism, in terms of breast cancer risk. Increased levels of urinary 2-OHE (about 80% from estrone, and 20% from estradiol and estriol) may relate to individual differences in enzyme activities, hormone replacement therapy, or dietary factors, such as increased soy and cruciferous vegetables, or exercise regimens. With increased levels of 2-OHE, there generally is less production of the 16alpha-hydroxyestrone, high levels of which have been associated with lupus and breast cancer. If the level of 2-OHE is significantly elevated above the reference range, there may be some increased likelihood of osteopenia. Assessment of bone loss processes in the urine is perhaps warranted in individuals with a very high level of 2-OHE.

16alpha-hydroxyestrone (16alpha-OHE1) is within the reference range. Normal or low levels are generally viewed as a beneficial finding since high levels of this metabolite of estrone may be linked to conditions such as lupus, breast cancer, and obesity. Exercise and dietary intake of cruciferous vegetables, soy, and fish oil (EPA) all appear to be of potential benefit increasing levels of 2-OHE and thereby keeping the levels of 16alpha-OHE1 normal or low.

The **2-OHE: 16alpha-OHE1 ratio** appears from the literature to be a useful gauge of estrogen metabolism. A low ratio may be associated with increased likelihood of estrogen-dependent diseases such as breast cancer and lupus. Ratios of greater than 2.0 are generally thought to reflect healthy estrogen metabolism. There are numerous modifiers of this ratio, which primarily function to alter the levels of 2-OHE. These include intake of indole-3-carbinols from cruciferous vegetables, flaxseed, soy, omega-3 fatty acids, and exercise. It is to be emphasized that some individuals appear to have a paradoxical response to treatments that typically would raise the 2-OHE; therefore, follow-up testing is strongly suggested.

On the other hand, an elevated 2-OHE: 16alpha-OHE1 ratio may be associated with an increased likelihood of osteopenia. Attention to bone loss processes in the urine is perhaps warranted in individuals with a very high 2-OHE: 16alpha-OHE1 ratio.

Urine creatinine concentration is within the reference range. Under certain conditions such as dehydration, excessive fluid intake, diuretic use, or abnormal metabolic states, the "spot" urine creatinine value from this sample may not be representative of average renal flow.